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Iron and Steel Scrap

UNITED STATES DEPARTMENT OF THE INTERIOR

The statistical data in this volume represents the most comprehensive, verified, domestic and international coverage for 1987 at the time the volume went to press. More recent information can be found in the monthly Iron and Steel Scrap Mineral Industry Surveys obtainable from Publications Distribution, Bureau of Mines, Box 18070, Cochrans Mill Road, Pittsburgh, PA 15236.

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This publication is a chapter from the current Bureau of Mines Minerals Yearbook, comprising *Volume I, Metals and Minerals; Volume II, Area Reports: Domestic; Volume III, Area Reports: International.* The separate volumes of the Yearbook are sold by the Superintendent of Documents, Washington, D.C. 20402.

Iron and Steel Scrap

By Raymond E. Brown[1]

Brokers, dealers, and other outside sources supplied domestic consumers in 1987 with 42.1 million short tons[2] of all types of ferrous scrap at a delivered value of approximately $3.55 billion, while exporting 10.4 million tons (excluding reselling material and ships, boats, and other vessels for scrapping) valued at $967 million. In 1986, domestic consumers received 37.1 million tons at a delivered value of approximately $2.69 billion; exports totaled 11.7 million tons valued at $1.06 billion.

Domestic Data Coverage.—Domestic production data for ferrous scrap are developed by the Bureau of Mines from voluntary monthly or annual surveys of U.S. operations. Of the operations to which a survey request was sent, 66% responded, representing an estimated 72% of the total consumption shown in table 2 for three types of scrap consumers. Consumption for the nonrespondents was estimated using prior reports adjusted by industry trends. An estimation error is also contained in the difference between the reported total consumption of purchased and home scrap and the sum of scrap receipts plus home scrap production, less scrap shipments, and adjustments for stock changes. For scrap consumption data shown in table 2, this difference amounted to 2% for manufacturers of pig iron and raw steel and castings, 0.1% for manufacturers of steel castings, 0.5% for iron foundries and miscellaneous users, and 1% overage for all types of manufacturers combined.

Table 1.—Salient U.S. iron and steel scrap and pig iron statistics

(Thousand short tons and thousand dollars)

	1983	1984	1985	1986	1987
Stocks, Dec. 31:					
Scrap at consumer plants	5,207	5,581	5,104	4,344	4,344
Pig iron at consumer and supplier plants	345	304	366	188	281
Total	5,552	5,885	5,570	4,532	5,125
Consumption:					
Scrap	61,722	68,702	70,488	65,556	69,562
Pig iron	39,970	52,592	51,411	51,004	50,050
Exports:					
Scrap (excludes reselling material and ships, boats, and other vessels for scrapping)	7,620	9,408	9,980	11,704	10,397
Value	$996,732	$917,961	$918,189	$1,062,849	$967,016
Imports for consumption:					
Scrap (excludes ingots and remelted)	641	877	611	734	848
Value	$48,319	$67,427	$46,499	$49,975	$62,016

Legislation and Government Programs.—Attorneys for the Ferrous Scrap Consumers Coalition asked the Office of the U.S. Trade Representative for information under section 305 of the Trade Act of 1974, as amended, about various countries' restrictions on exports of ferrous scrap. The U.S. Department of Commerce released a report in June that analyzed trends in the U.S. ferrous scrap industry. The study noted that decreased recycling and increased disposal have come about as a result of investment and stronger enforcement of environmental statutes and regulations.[3]

The Environmental Protection Agency (EPA) published revised particulate emis-

sion controls on July 1. Under the new regulations, smaller particles would have to be captured by emission control equipment.[4] Subsequently, the American Iron and Steel Institute filed a petition in the U.S. Court of Appeals seeking a review of these revised controls. In October, the U.S. Court of Appeals upheld a challenge to EPA's authority to regulate certain materials as "solid waste" under the Federal hazardous waste regulations.

The U.S. Department of Transportation proposed tightening regulations governing hazardous materials on November 6. The proposed regulations would apply to shipments of spontaneously combustible materials such as ferrous metal borings, shavings, and turnings or cuttings in a form subject to self-heating.[5]

AVAILABLE SUPPLY, CONSUMPTION, AND STOCKS

Overall domestic demand for ferrous scrap by the iron and steel and the ferrous castings industries, the major consumers of this raw material, increased by about 10% in 1987 compared with that of 1986. Domestic demand for ferrous scrap by producers of pig iron and raw steel was up by a larger quantity than that for the ferrous castings industry. Since spring, prices for most premium grades of ferrous scrap rose significantly because of higher steel and ferrous castings production, a larger share of steel production in electric furnaces, lower generation of home scrap because of increased continuous casting, and a weakening dollar, which helped to fend off both ferrous scrap and steel imports. In October, certain steel mills began adding scrap surcharges to the base price of some of their steel products. Also, some minimills, which are scrap-based electric arc furnace (EAF) operations, stopped accepting orders from new customers and placed old customers on allocation.

USX Corp., a major scrap consumer, and the United Steelworkers of America reached a labor agreement in January that ended an unprecedented 6-month-long strike. In February, USX announced that it would close four steelmaking facilities indefinitely. The plants to be closed were in Provo, UT; Baytown, TX; and McKeesport and Saxonburg, PA. Subsequently, on August 31, USX sold its Geneva works near Provo, UT, to Basic Manufacturing & Technologies of Utah Inc., a group of private investors. The operation would be renamed Geneva Steel of Utah. The Geneva plant has coke ovens, blast furnaces, and an open-hearth shop with about 2 million tons per year of raw steelmaking capacity. USX also agreed to pay a $875,000 fine as a result of emissions generated at its Clairton, PA, cokemaking facility.

Sharon Steel Corp., Sharon, PA, filed for protection under chapter 11 of the Federal Bankruptcy Act on April 17. This was the third major U.S. steel producer attempting to reorganize under chapter 11 in recent years.

Weirton Steel Corp., Weirton, WV, after more than a year of negotiations with Korf Engineering GmbH, Federal Republic of Germany, canceled the joint construction of a new ironmaking demonstration plant utilizing Korf's Corex (previously known as KR for Kohler Reduktion) process. The Corex technology involves direct use of coal instead of coke to produce hot metal.

On November 19, the National Steel Producers Association and the American Metal Market, a Fairchild publication, cosponsored a 1-day conference in Washington, DC, on the problem of disposal of electric-furnace dust. Unless EPA grants an extension, the landfilling of hazardous EAF dust would be banned on August 8, 1988.

The domestic steel industry continued its efforts to make changes to improve competitiveness and increase earnings. Several scrap-based minimill producers have used or plan to use state-of-the-art technologies to sharply reduce overall operating costs and improve mill efficiency to provide higher quality steels and to expand product lines. For example, Nucor Corp. is testing a direct-current arc furnace and a CONSTEEL continuous steelmaking system at its Darlington, SC, plant. The CONSTEEL process was developed by J. A. Vallomy, Intersteel Technology Inc., Matthews, NC. Nucor is also installing a thin slab caster at its facility in Crawfordsville, IN, which would produce material with thicknesses as low as 2 inches and widths as great as 53 inches at a speed of up to 20 feet per minute. This system is being supplied by SMS Schloemann-Siemag AG, Dusseldorf, Federal Republic of Germany, and two of its affiliates, SMS Engineering Inc., Pittsburgh, PA, and SMS Concast Inc., Montvale, NJ. Additionally, Nucor is installing a 650,000-ton-per-year structural mill at its Blytheville, AR, plant that would make

wide-flange (10 to 25 inches) beams. Nucor and Yamato Kogyo Co. Ltd. of Japan signed a contract to construct and operate the system, which is patterned after a Yamato facility in Japan.

The Institute of Scrap Iron and Steel Inc., Washington, DC, and the National Association of Recycling Industries Inc., New York, NY, voted to merge their organizations into a single scrap industry trade association. The new association would be known as the Institute of Scrap Recycling Industries (ISRI), with its headquarters in Washington, DC. ISRI also submitted a written request to the Occupational Safety and Health Administration (OSHA) seeking limited relief for scrap processors, especially to keep scrap processors classified as distributors but not as suppliers. According to ISRI, suppliers of scrap, but not distributors, should be responsible for preparing material safety data sheets. Additionally, ISRI contended that certain OSHA workplace requirements hindered effective recycling. ISRI disagreed with the OSHA regulation that considers chromium and nickel contained in stainless steel tableware potentially hazardous in a scrap plant but not in a restaurant or home.

There was a number of books and papers published in 1987 that would be of interest to collectors, dealers, brokers, exporters, processors, and consumers of ferrous scrap. A report by the Center for Metals Production assessed existing and potential EAF capacity including research and development recommendations for minimizing energy consumption and optimizing output.[6] A book by William T. Hogan, director of the Industrial Economics Research Institute of Fordham University, entitled "Minimills and Integrated Mills," subtitled "A Comparison of Steelmaking in the United States," chronicled the massive changes in the U.S. steel industry since annual production capacity reached a peak in the mid-1970's.[7] A publication of the International Iron and Steel Institute entitled "Scrap and the Steel Industry" presented information on recent developments in the field of solid metallics for ironmaking and steelmaking. Ferrous scrap topics included classification systems, sources, impact of technology changes on supply and demand, among others.[8]

Raw steel production was 88.5 million tons in 1987 compared with 81.6 million tons in 1986. The EAF share of raw steel production was 38% in 1987 and 37% in 1986. Continuous cast steel production represented 59% of total raw steel production in 1987 compared with 55% in 1986. Raw steel capacity utilization was 79% in 1987 and 64% in 1986. Net shipments of all grades of steel mill products were 76.5 million tons in 1987 and 70.3 million tons in 1986. Imports of steel mill products decreased from 20.7 million tons in 1986 to 20.4 million tons in 1987. Exports of steel mill products increased from 929,000 tons in 1986 to 1.13 million tons in 1987.

Iron castings shipments totaled 10.0 million tons in 1987 compared with 8.65 million tons (revised) in 1986. Steel castings shipments totaled 874,000 tons in 1987 compared with 829,000 tons (revised) in 1986.

Steel mills accounted for 74.8% of all scrap received from brokers, dealers, and other outside sources; steel foundries received 3.3%; and iron castings producers and miscellaneous users received 21.9%. The apparent total domestic consumption of ferrous scrap in 1987, in million tons, was composed of 44.8 net receipts (total receipts minus shipments), 24.7 home scrap, and a buildup of 0.5 stocks. The 1987 total was 69.0 million tons. This figure compared with an apparent total domestic consumption of 65.2 in 1986. The total market for U.S. scrap (net receipts plus exports minus imports) was 54.6 million tons in 1987 compared with 49.3 million tons in 1986. Stocks of ferrous scrap held by each of the three major consumers increased in 1987. Stocks held by steel mills increased by the largest quantity and by the largest percentage.

Since 1970, the ratio of total home scrap production, expressed as a percentage of total domestic apparent consumption of ferrous scrap declined significantly owing to changes in steelmaking technology. For example, the ratio declined steadily from about 60% in 1970 to about 40% in 1986. Adoption of steelmaking technology that resulted in this decline and a corresponding increase in the ratio of purchased scrap to raw steel production included conversion to electric arc furnace production, adoption of continuous casting which produced higher yields, and a number of other technical advances that increased scrap consumption in the basic oxygen furnace.

Public awareness of the solid waste problem has been driving mandatory recycling legislation by States, counties, and municipalities, which has the potential to reduce the solid waste stream. Mandatory recycling involves source separation, which means that materials are separated by home owners instead of municipal or pri-

vate employees. Source separation would increase the availability of municipal ferrous scrap, a material that is currently not being recycled effectively. However, the total supply of ferrous scrap has never been a major problem in this country. In fact, ISRI has recorded a surplus of ferrous scrap for each of the last 31 years since 1956. ISRI estimated that more than 900 million tons of ferrous scrap has been placed in involuntary inventory for lack of markets. A city or county organizing a recycling program must establish markets for materials removed from the solid waste stream. To be marketable, material recovered from municipal solid waste, such as steel cans, must meet certain specifications. However, the quality of municipal ferrous scrap limits its use as a raw material for new products. This type of purchased scrap would be a major source of residual and unspecified elements if used to produce steel and ferrous castings. For a successful recycling program, municipalities would have to develop strong working relationships with brokers, processors, or manufacturers that use secondary materials. Scrap processors have developed expertise over the years in upgrading secondary materials into marketable products.

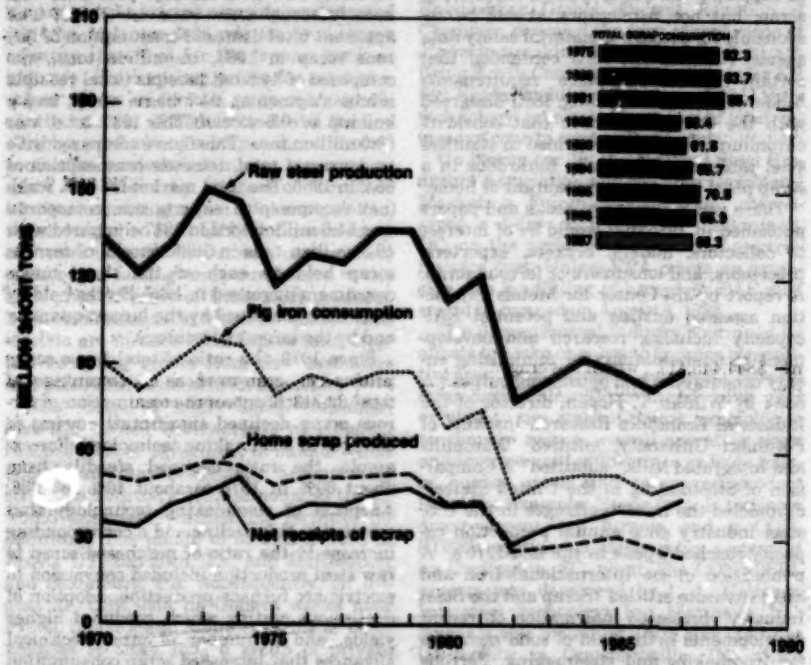

Figure 1.—Raw steel production (AISI), total iron and steel scrap consumption, pig iron consumption, home scrap production, and net scrap receipts.

PRICES

Based on average composite delivered prices per long ton quoted weekly and monthly by the American Metal Market (AMM), No. 1 heavy melting steel scrap cost $85.76 in 1987, ranging from a low of $73.72 in April to a high of $109.90 in October. Based on Iron Age data, No. 1 heavy melting steel scrap cost $85.64 in 1987, ranging from $73.17 in April to $106.92 in October. The average composite price for No. 1 heavy melting steel scrap in 1987 was higher compared with that of 1986, by 10% based on AMM data and by 17% based on Iron Age data.

In 1987, the average price for total ferrous scrap exports increased by 4% compared with that of 1986 to $96.96 per ton, while that of total imports increased by 43% to $97.29 per ton.

FOREIGN TRADE

The trade surplus in 1987 for all classes of ferrous scrap (including rerolling material and ships, boats, and other vessels for scrapping) was $914 million in value and 9.83 million tons in quantity. This is a decrease of 11% and 13% in value and quantity, respectively, compared with the 1986 record-high surplus of $1.03 billion and 11.3 million tons, respectively. The balance of trade for all U.S. merchandise consisted of a record deficit of $171 billion in 1987, up from a previous record deficit of $156 billion in 1986.

Total U.S. exports of ferrous scrap (excluding rerolling material; ships, boats, and other vessels for scrapping; stainless steel; and alloy steel) in 1987 went to 43 countries and totaled 9,945,420 tons valued at $844,445,417, which averaged $84.91 per ton. Six countries received 75.8% of the total quantity. The largest tonnages went to the Republic of Korea, 2,622,738 tons; Turkey, 2,252,637 tons; Japan, 902,462 tons; India, 874,362 tons; Mexico, 487,778 tons; and Taiwan, 400,207 tons. The value of scrap exports to these six countries was $653,296,661; 77.4% of the total.

Total U.S. exports of stainless steel scrap in 1987 went to 27 countries and consisted of 172,273 tons valued at $94,024,655 that averaged $545.79 per ton. Six countries received 85.0% of the total quantity, of which the largest tonnages went to Japan, 57,776 tons; Spain, 39,840 tons; Netherlands, 17,843 tons; Canada, 12,858 tons; Belgium, 11,880 tons; and Brazil, 6,233 tons. The value of stainless steel scrap exports to these six countries was $79,107,893; 84.1% of the total.

U.S. exports of alloy steel scrap (excluding stainless steel) in 1987 were shipped to 45 countries. The total comprised 248,974 tons valued at $28,548,281 which averaged $114.66 per ton. Six countries received 78.5% of the total quantity, of which the largest tonnages went to Singapore, 99,249 tons; Japan, 25,451 tons; Taiwan, 22,018 tons; Sweden, 21,657 tons; Canada, 14,103 tons; and Mexico, 13,013 tons. The value of alloy steel scrap to these six countries was $18,122,213; 63.5% of the total.

Total imports for consumption of iron and steel scrap in 1987 contained 2,803 tons of tinplate waste or scrap valued at $360,478. The balance of imports consisted of 826,762 tons of iron and steel scrap without dutiable alloys valued at $76,563,597 and 18,412 tons of iron or steel waste and scrap valued at $5,071,597.

WORLD REVIEW

Total world demand for iron and steel scrap in 1987 increased over that of 1986. Overall demand for ferrous scrap was higher in market economy countries than in countries with centrally planned economies. Most of the increase in demand, on a quantity basis, came from the United States. Countries with the sharpest increases in demand, on a percentage basis, were Argentina, China, the Republic of Korea, Turkey, the United Kingdom, the United States, and Venezuela.

The United States continued to be the leading exporting country of iron and steel scrap. The U.S.S.R. and the United Kingdom were also major exporters of ferrous scrap.

Work has begun on the infrastructure for a new Navipe maritime recycling center at Astakos on the west coast of Greece. Activities planned at Navipe would include the startup of a shipbreaking operation at year-end 1988 with an anticipated total annual scrap capacity of about 340,000 tons.

TECHNOLOGY[1]

Results from testing of the CONSTEEL continuous steelmaking process at Nucor's minimill facility in Darlington, SC, established the feasibility of the system. One benefit of the continuous process was that it was more effective than a batch process and was controllable at any point in time. Also, in melting scrap, preheating up to about 800° C with primary fuel was more economical than introducing the same heat with electric energy in the furnace.[2]

There have been several reported incidents at U.S. mills in the last few years where radioactive materials have been accidently processed with metal scrap. The cleanup cost after such an incident can range into the millions of dollars. Workers, and ultimately the public, could be exposed to radioactive material. Incidents typifying the potential impact that a melted radioactive material could have can be documented by accidents that occurred at a California steel plant, a New York steel mill, and a rebar mill in Juarez, Mexico. State-of-the-art radiation-monitoring devices have been purchased and installed at strategic locations at some U.S. minimills to detect radioactive contaminated scrap so that it can be removed from incoming material.[10]

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[1]Physical scientist, Branch of Ferrous Metals.

[2]All quantities are in short tons unless otherwise specified.

[3]Raymond, J. P. Trends in the U.S. Ferrous Scrap Industry, U.S. Department of Commerce-International Trade Administration. U.S. GPO. [illegible], June 1987, 54 pp.

[4]Federal Register. Environmental Protection Agency. Ambient Air Quality Standards for Particulate Matter; Final Rules. V. 52, No. 126, July 1, 1987, pp. 24634-24780.

[5]———. U.S. Department of Transportation. Performance-Oriented Packaging Standards; Proposed Rulemaking. V. 52, No. 215, Nov. 6, 1987, pp. 42772-42900.

[6]Center for Metals Production. Technoeconomic Assessment of Electric Steelmaking Through the Year 2000. Prepared for U.S. Department of Energy and Electric Power Research Institute (EPRI). EPRI EM-5445, Res. Proj. 2787-2, Final Rep., Oct. 1987, 229 pp.

[7]Hogan, W. T. Minimills and Integrated Mills—A Comparison of Steelmaking in the United States. Lexington Books, No. 0-669-14620-1, 1987, 143 pp.

[8]International Iron and Steel Institute. Scrap and the Steel Industry—Trends and Prospects for Solid Metallics. IISI, Committee on Raw Mater., Brussels, Belgium, 1987, 234 pp.

[9]Spivey, P. R. and J. A. Vallomy. Operation and Experience of the CONSTEEL Continuous Steelmaking Process at Nucor Steel. Proc. 44th Electric Furnace Conf., ISS-AIME, Chicago, IL, Dec. 8-11, 1987. AIME, Warrendale, PA, 1987, pp. 75-80.

[10]Rostik, L. F., and C. W. Avent. Environmental Controls at Work—Chaparral Experience. Proc. 45th Electric Furnace Conf., ISS-AIME, Chicago, IL, Dec. 8-11, 1987. AIME, Warrendale, PA, 1987, p. 169.

Table 2.—U.S. consumer receipts, production, consumption, shipments, and stocks of iron and steel scrap and pig iron in 1957, by grades

(Thousand short tons)

Grade	Receipts of scrap: New & prompt industrial, dealers, other outside sources	Receipts of scrap: From other consumers' plants	Production of home scrap: Receiving-heating scrap resulting from current operations	Production of home scrap: Obsolete scrap (includes forge, machine, shop, dock, scrap from old equipment, buildings, etc.)	Consumption of both purchased and home scrap (includes recirculating scrap)	Shipments of scrap	Stocks, Dec. 31
MANUFACTURERS OF PIG IRON AND RAW STEEL AND CASTINGS							
Carbon steel:							
Low-phosphorus plate and punchings	252	(1)	2	(1)	256	(1)	20
Cut structural and plate	1,883	102	264	--	1,772	11	146
No. 1 heavy melting steel	9,498	484	5,494	417	14,751	333	1,008
No. 2 heavy melting steel	2,900	167	844	2	3,836	16	369
No. 1 and electric-furnace bundles	6,099	192	1,111	2	6,329	607	445
No. 2 and all other bundles	808	54	74	--	906	45	54
Electric furnace, 1 foot and under (not bundles)	97	97	19	(1)	202	2	32
Railroad rails	353	11	24	--	414	--	15
Turnings and borings	700	56	213	--	964	13	75
Slag scrap (Fe content 70%)	679	190	1,941	1	2,430	297	179
Shredded or fragmentized	3,125	1,602	121	--	4,812	--	841
No. 1 busheling	1,884	220	115	(1)	2,081	77	147
All other carbon steel scrap	2,043	1,129	3,909	85	6,517	606	331
Stainless steel scrap	617	28	469	(1)	1,096	18	49
Alloy steel (except stainless)	101	127	745	(1)	965	45	133
Ingot mold and stool scrap	376	158	400	563	1,529	370	219
Machinery and cupola cast iron	7	13	3	--	19	3	3
Cast-iron borings	141	1	1	(1)	129	10	5
Motor blocks	--	--	--	--	--	--	--
Other iron scrap	408	147	338	1	806	147	143
Other mixed scrap	272	126	78	1	469	15	35
Total[2]	31,490	4,899	18,276	813	[3]51,685	2,494	3,885
MANUFACTURERS OF STEEL CASTINGS							
Carbon steel:							
Low-phosphorus plate and punchings	274	19	98	(1)	309	21	13
Cut structural and plate	149	24	16	--	179	--	19
No. 1 heavy melting steel	92	2	81	(1)	175	--	9
No. 2 heavy melting steel	169	--	1	--	164	--	12
No. 1 and electric-furnace bundles	5	--	--	--	6	--	--
No. 2 and all other bundles	--	--	--	--	--	--	--
Electric furnaces, 1 foot and under (not bundles)	35	--	10	--	46	1	2
Railroad rails	4	--	(1)	--	3	--	1
Turnings and borings	20	--	9	--	27	2	1
Slag scrap (Fe content 70%)	--	--	--	--	--	--	--
Shredded or fragmentized	43	--	--	--	36	--	8
No. 1 busheling	48	6	--	--	49	(1)	1
All other carbon steel scrap	268	8	96	--	282	12	8
Stainless steel scrap	12	2	31	(1)	43	1	5
Alloy steel (except stainless)	61	--	181	--	190	3	46
Ingot mold and stool scrap	--	--	--	--	--	--	--
Machinery and cupola cast iron	37	--	3	--	39	--	5
Cast-iron borings	52	--	12	--	62	--	2
Motor blocks	(1)	--	--	--	(1)	--	--
Other iron scrap	20	--	67	--	86	4	14
Other mixed scrap	--	--	6	--	6	--	(1)
Total[2]	1,390	58	564	(1)	1,699	114	180

See footnotes at end of table.

Table 2.—U.S. consumer receipts, production, consumption, shipments, and stocks of iron and steel scrap and pig iron in 1987, by grade —Continued

(Thousand short tons)

Grade	Receipts of scrap		Production of home scrap		Consumption of both purchased and home scrap (includes revolving scrap)	Ship-ments of scrap	Ending stocks Dec. 31
	From brokers, dealers, other com-panies, and outside sources	From other com-pany plants	Receiv-ing, scrap resulting from current op-erations	Obsolete scrap (includes ho-mogeneous and mobile scrap from old equip-ment, build-ings, etc.)			
IRON FOUNDRIES AND MISCELLANEOUS USERS							
Carbon steel:							
Low-phosphorus plate and punchings	1,019	92	286	1	1,397	(1)	43
Cut structural and plate	1,089	69	184	(1)	1,321	1	94
No. 1 heavy melting steel	121	89	351	--	217	288	19
No. 2 heavy melting steel	320	--	48	--	380	10	12
No. 1 and electric-furnace bundles	186	167	81	--	420	--	18
No. 2 and all other bundles	177	--	--	--	179	--	20
Electric furnace, 1 foot and under (not bundles)	84	3	1	--	86	--	3
Railroad rails	191	(1)	3	--	188	7	5
Turnings and borings	888	2	6	--	896	2	20
Slag scrap (Fe content 70%)	21	--	6	--	19	2	27
Shredded or fragmentized	1,889	89	(1)	--	13	(1)	2
No. 1 busheling	482	24	35	--	1,457	2	86
All other carbon steel scrap	643	7	16	(1)	888	(1)	19
Stainless steel scrap	13	--	6	--	549	4	46
Alloy steel (except stainless)	82	--	7	1	14	2	3
Ingot mold and stool scrap	152	(1)	189	--	44	1	12
Machinery and cupola cast iron	992	6	341	30	853	2	29
Cast-iron borings	610	186	75	6	1,229	7	78
Motor blocks	483	48	922	--	897	28	89
Other iron scrap	844	46	2,297	(1)	1,413	17	66
Other mixed scrap	568	13	464	(1)	2,054	27	117
					1,088	88	84
Total[2]	9,221	799	5,080	38	14,739	420	859
TOTAL—ALL TYPES OF MANUFACTURERS[3]							
Carbon steel:							
Low-phosphorus plate and punchings	1,736	112	330	1	2,182	22	97
Cut structural and plate	2,221	192	485	(1)	2,850	11	259
No. 1 heavy melting steel	9,718	494	5,826	417	15,143	697	1,021
No. 2 heavy melting steel	5,409	197	997	2	4,888	35	338
No. 1 and electric-furnace bundles	6,290	889	1,182	2	6,924	697	481
No. 2 and all other bundles	965	54	74	--	1,081	45	84
Electric furnace, 1 foot and under (not bundles)	196	100	20	(1)	288	2	28
Railroad rails	648	11	27	--	688	3	42
Turnings and borings	1,622	88	227	--	1,901	17	103
Slag scrap (Fe content 70%)	709	139	1,261	1	2,448	208	181
Shredded or fragmentized	4,228	1,801	121	--	6,265	2	433
No. 1 busheling	2,276	889	180	(1)	2,939	77	196
All other carbon steel scrap	2,854	1,144	6,198	35	9,229	681	885
Stainless steel scrap	642	24	497	(1)	1,155	22	55
Alloy steel (except stainless)	196	197	884	1	1,190	49	210
Ingot mold and steel scrap	888	188	882	868	1,978	878	848
Machinery and cupola cast iron	1,088	19	918	30	1,807	15	82
Cast-iron borings	892	196	88	6	1,046	88	88
Motor blocks	488	48	922	--	1,418	17	88
Other iron scrap	978	188	2,842	8	2,746	178	877
Other mixed scrap	868	189	648	1	1,472	88	110
Grand total[2]	42,101	5,726	22,880	880	[4]62,208	3,029	4,844

[1]Less than 1/2 unit.

[2]Data may not add to totals shown because of independent rounding.

[3]Internal evaluation indicates that scrap consumption in electric furnaces operated by manufacturers of pig iron and raw steel and castings is understated by approximately 4.0 million short tons.

Table 2.—U.S. consumer receipts, production, consumption, shipments, and stocks of pig iron and direct-reduced iron in 1987

(Thousand short tons)

	Receipts	Production	Consumption	Shipments	Stocks, Dec. 31
MANUFACTURERS OF PIG IRON AND RAW STEEL AND CASTINGS					
Pig iron	2,264	48,208	48,965	1,512	233
MANUFACTURERS OF STEEL CASTINGS					
Pig iron	13	--	13	(1)	2
IRON FOUNDRIES AND MISCELLANEOUS USERS					
Pig iron	1,072	--	1,065	29	33
TOTAL—ALL TYPES OF MANUFACTURERS					
Pig iron	3,350	48,208	50,043	1,572	331
Direct-reduced or prereduced iron	449	--	250	W	197

W Withheld to avoid disclosing company proprietary data.
[1]Less than 1/2 unit.

Table 4.—Consumption of iron and steel scrap and pig iron in the United States in 1987, by type of furnace or other use

(Thousand short tons)

Type of furnace or other use	Manufacturers of pig iron and raw steel and castings		Manufacturers of steel castings		Iron foundries and miscellaneous users		Total, all types[1]	
	Scrap	Pig iron	Scrap	Pig iron	Scrap	Pig iron	Scrap	Pig iron
Blast furnace[2]	2,345	--	--	--	--	--	2,345	--
Basic oxygen process[3]	16,892	46,741	--	--	--	--	16,892	46,741
Open-hearth furnace	1,197	W	W	W	--	--	1,197	W
Electric furnace	[4]32,044	1,466	1,782	13	4,753	262	38,579	1,889
Cupola furnace	16	118	115	--	8,764	353	8,894	970
Other (including air furnace)[5]	492	40	8	--	223	16	660	88
Direct castings[6]	--	460	--	--	--	522	--	982
Total[1]	51,985	48,965	1,899	13	14,739	1,053	68,206	50,699

W Withheld to avoid disclosing company proprietary data; included with "Electric furnace."
[1]Data may not add to totals shown because of independent rounding.
[2]Includes consumption in blast furnaces producing pig iron.
[3]Includes scrap and pig iron processed in metallurgical blast cupolas and used in oxygen converters.
[4]Internal evaluation, indicates that scrap consumption in electric furnaces operated by manufacturers of pig iron and raw steel and castings is understated by approximately 4.0 million short tons.
[5]Includes vacuum melting furnaces and miscellaneous uses.
[6]Includes ingot molds and stools.

Table 5.—Proportion of iron and steel scrap and pig iron used in furnaces in the United States in 1987

(Percent)

Type of furnace	Scrap	Pig iron
Basic oxygen process	25.1	74.9
Open-hearth furnace	41.8	58.2
Electric furnace	99.2	.8
Cupola furnace	98.4	2.6
Other (including air furnace)	92.2	7.8

Table 6.—Iron and steel scrap supply[1] available for consumption in 1987, by region and State

(Thousand short tons)

Region and State	Receipts of scrap		Production of home scrap					
	From brokers, dealers, other outside sources	From other own-company plants	Recirculating scrap resulting from current operations	Obsolete scrap (includes ingot molds, stools, scrap from old equipment, buildings, etc.)	Total new supply[2]	Shipments of scrap[3]	New supply available for consumption[1]
New England and Middle Atlantic: Connecticut, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island	1,193	79	512	6	1,590	51	1,539
Pennsylvania	5,665	511	3,761	97	10,033	666	9,367
Total[2]	6,858	590	4,073	102	11,622	697	10,926
North Central:							
Illinois	3,999	813	2,013	25	6,855	56	6,799
Indiana	4,364	907	4,648	6	9,925	823	9,102
Iowa, Kansas, Minnesota, Missouri, Nebraska, Wisconsin	3,630	288	1,284	(4)	5,450	81	5,369
Michigan	4,121	525	2,188	39	6,873	200	6,674
Ohio	6,239	984	4,304	559	12,086	766	11,270
Total[2]	22,553	3,420	14,537	629	41,139	1,926	39,214
South Atlantic: Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia	4,607	712	2,471	61	7,850	163	7,687
South Central: Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, Texas	5,506	978	2,290	56	8,824	230	8,593
Mountain and Pacific: Arizona, California, Colorado, Hawaii, Oregon, Utah, Washington	2,581	41	520	3	3,143	15	3,127
Grand total[2]	42,101	5,736	23,890	850	72,577	3,029	69,548

[1]New supply available for consumption is a net figure computed by adding production to receipts and deducting scrap shipped during the year. The plus or minus difference in stock levels at the beginning and end of the year is not taken into consideration.
[2]Data may not add to totals shown because of independent rounding.
[3]Includes scrap shipped, transferred, or otherwise disposed of during the year.
[4]Less than 1/2 unit.

Table 7.—U.S. consumption of iron and steel scrap and pig iron[1] in 1987, by region and State

(Thousand short tons)

Region and State	Pig iron and steel ingots and castings		Steel castings		Iron foundries and miscellaneous users		Total[2]	
	Scrap	Pig iron	Scrap	Pig iron	Scrap	Pig iron	Scrap	Pig iron
New England and Middle Atlantic: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island	1,007	2	27	2	542	21	1,576	25
Pennsylvania	8,248	4,913	101	2	995	281	9,345	5,195
Total[2]	9,255	4,915	128	3	1,537	302	10,921	5,220
North Central:								
Illinois	5,513	2,520	148	--	1,088	57	6,749	2,577
Indiana	7,222	16,659	159	2	805	47	8,295	16,708
Iowa, Kansas, Minnesota, Missouri, Nebraska, Wisconsin	2,888	--	396	2	2,571	105	5,357	107

See footnotes at end of table.

Table 7.—U.S. consumption of iron and steel scrap and pig iron[1] in 1987, by region and State—Continued

(Thousand short tons)

Region and State	Pig iron and steel ingots and castings		Steel castings		Iron foundries and miscellaneous users		Total[2]	
	Scrap	Pig iron	Scrap	Pig iron	Scrap	Pig iron	Scrap	Pig iron
North Central—Continued								
Michigan	4,066	4,363	8	(*)	2,771	235	6,849	4,598
Ohio	8,265	11,551	256	5	2,609	103	11,129	11,659
Total[2]	27,565	35,298	1,004	9	9,635	677	38,204	35,984
South Atlantic:								
Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia	5,944	5,703	12	--	1,398	35	7,354	5,738
South Central:								
Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, Texas	6,733	2,929	275	1	1,820	25	8,830	2,954
Mountain and Pacific:								
Arizona, California, Colorado, Hawaii, Oregon, Utah, Washington	2,169	120	490	(*)	347	13	2,904	134
Grand total[2]	51,665	48,965	1,889	12	14,739	1,053	68,308	50,030

[1]Includes molten pig iron used for ingot molds and direct castings.
[2]Data may not add to totals shown because of independent rounding.
[3]Less than 1/2 unit.

Table 8.—U.S. consumer stocks of iron and steel scrap and pig iron, December 31, 1987, by region and State

(Thousand short tons)

Region and State	Carbon steel (excludes rolling rails)	Stainless steel	Alloy steel (excludes stainless)	Cast iron (includes borings)	Other[2] grades of scrap	Total scrap stocks[1]	Pig iron stocks
New England and Middle Atlantic:							
Connecticut, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island	117	6	28	35	8	179	8
Pennsylvania	420	33	79	124	27	683	69
Total[1]	537	38	107	149	30	861	71
North Central:							
Illinois	428	(*)	11	37	1	487	10
Indiana	411	W	10	144	6	571	54
Iowa, Kansas, Minnesota, Missouri, Nebraska	313	2	5	11	14	345	13
Michigan	246	1	5	37	5	294	10
Ohio	432	7	41	97	7	584	26
Wisconsin	11	2	--	11	--	24	3
Total[1]	1,852	11	71	338	32	2,306	115
South Atlantic:							
Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia	429	4	2	71	9	515	40
South Central:							
Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, Texas	708	2	15	108	37	873	53
Mountain and Pacific:							
Arizona, California, Colorado, Hawaii, Oregon, Utah, Washington	212	(*)	15	61	1	290	3
Grand total[1]	3,740	55	210	727	110	4,844	281

W Withheld to avoid disclosing company proprietary data.
[1]Data may not add to totals shown because of independent rounding.
[2]Less than 1/2 unit.

Table 9.—U.S. average monthly price and composite price for No. 1 heavy melting steel scrap in 1987

(Per long ton)

Month	Chicago	Pittsburgh	Philadelphia	Composite price[1]
January	$78.00	$80.63	$74.83	$77.83
February	78.00	82.84	72.00	77.62
March	73.00	79.91	72.00	74.97
April	72.08	77.50	71.64	73.72
May	74.15	80.90	70.38	74.94
June	77.00	83.00	70.00	76.67
July	78.73	82.27	72.86	78.29
August	84.00	89.48	74.71	82.73
September	96.53	94.95	82.57	91.35
October	116.00	115.64	98.05	109.90
November	116.47	113.61	100.00	109.69
December	109.73	105.82	94.55	101.37
Average 1987	87.22	90.58	79.47	85.76
Average 1986	73.49	74.87	74.17	74.17

[1]American Metal Market, composite price, Chicago, Pittsburgh, and Philadelphia.

Table 10.—U.S. exports[1] of iron and steel scrap, by country

(Thousand short tons and thousand dollars)

Country	1983		1984		1985		1986		1987	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Canada	539	99,717	779	59,521	446	38,445	365	31,436	321	34,516
China	1	177	227	21,190	387	32,790	340	28,506	249	23,423
Italy	65	4,286	306	27,038	307	30,250	286	26,177	175	15,975
Japan	2,600	218,527	2,980	264,867	2,110	199,135	1,725	170,015	986	123,051
Korea, Republic of	1,476	111,051	1,833	160,992	1,978	160,674	2,969	247,055	2,630	213,550
Mexico	419	36,017	484	47,648	597	57,535	318	29,981	501	48,278
Spain	356	22,734	608	55,228	910	72,212	673	51,771	417	42,506
Taiwan	490	75,638	605	54,515	414	45,163	667	74,387	426	46,639
Turkey	700	69,851	807	69,679	955	80,133	1,417	115,334	2,254	195,971
Venezuela	22	1,197	292	23,246	471	36,284	433	36,673	150	10,273
Other	845	76,058	977	124,151	1,373	165,360	2,441	242,514	2,247	217,149
Total[2]	7,520	626,733	9,498	917,981	9,950	918,186	11,704	1,053,849	10,867	967,018

[1]Excludes rerolling material and ships, boats, and other vessels for scrapping.
[2]Data may not add to totals shown because of independent rounding.

Table 11.—U.S. exports and imports for consumption of iron and steel scrap, by class

(Thousand short tons and thousand dollars)

Class	1983		1984		1985		1986		1987	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Exports:										
No. 1 heavy melting scrap	1,986	198,935	2,512	215,492	2,766	218,598	2,922	230,519	2,446	289,980
No. 2 heavy melting scrap	720	58,081	879	70,506	767	58,537	797	58,879	579	45,994
No. 1 bundles	206	16,480	77	8,258	185	17,172	155	13,876	167	14,980
No. 2 bundles	230	13,727	296	18,826	306	21,100	301	21,095	306	22,628
Stainless steel scrap	80	44,671	164	98,426	180	104,598	165	90,048	172	94,025
Shredded steel scrap	2,029	154,753	2,775	261,976	2,539	220,730	2,495	208,040	3,214	236,289
Borings, shovelings, turnings	522	28,277	900	49,664	875	56,314	731	45,536	528	33,882
Other steel scrap[1]	1,522	164,161	1,416	155,665	1,646	162,484	2,048	200,094	2,033	195,197
Iron scrap	305	24,692	590	50,748	668	58,707	1,091	93,226	762	65,217
Total[2]	7,520	636,725	9,498	917,981	9,950	918,198	11,704	1,003,849	10,367	997,913
Ships, boats, other vessels (for scrapping)	198	9,622	283	9,805	131	6,627	212	16,675	246	20,264
Rerolling material	34	4,194	58	10,918	110	15,604	78	11,302	57	5,889
Total exports[2]	7,752	650,540	9,840	938,402	10,191	940,416	11,994	1,031,826	10,670	998,143
Imports for consumption:										
Iron and steel scrap	641	48,219	577	47,427	611	46,690	724	49,073	842	82,016

[1]Includes terneplate and tinplate.
[2]Data may not add to totals shown because of independent rounding.

Table 12.—U.S. exports of rerolling material (scrap), by country

(Thousand short tons and thousand dollars)

Country	1983		1984		1985		1986		1987	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Canada	(1)	101	(1)	5,650	(1)	41	(1)	44	1	170
China	--	--	--	--	19	2,497	--	--	--	--
Korea, Republic of	5	462	--	--	--	--	--	--	(1)	8
Mexico	28	3,579	37	3,248	90	12,511	77	11,186	45	7,346
Turkey	--	--	--	--	--	--	--	--	10	1,111
Other	r(1)	r33	r(1)	r120	1	596	(1)	r72	1	228
Total[2]	34	4,194	58	10,918	110	15,604	78	11,302	57	8,863

rRevised.
[1]Less than 1/2 unit.
[2]Data may not add to totals shown because of independent rounding.

Table 13.—U.S. imports for consumption of iron and steel scrap,[1] by country

Country	1986		1987	
	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)
Austria	58	$125	169	$350
Belgium-Luxembourg	129	226	2	5
Canada	562,903	38,151	725,622	68,558
Germany, Federal Republic of	2,365	850	863	205
Japan	12,984	1,069	16,754	1,227
Mexico	69,929	6,158	12,787	3,783
Netherlands	816	347	10,997	964
Sweden	12	35	624	153
United Kingdom	22,482	311	50,157	5,981
Other	52,201	1,899	19,032	810
Total[2]	723,558	49,073	842,971	82,016

[1]Includes tinplate and terneplate.
[2]Data may not add to totals shown because of independent rounding.

Table 14.—Iron and steel scrap consumption in selected countries[1]

(Thousand short tons)

Continent, country group, and country	1982	1983	1984	1985	1986
North America:					
Canada[2 3 4 5]	6,981	6,965	r7,000	7,305	7,804
United States[2 3 5]	56,386	61,782	65,702	70,498	65,856
Latin America:[7]					
Argentina	1,569	1,570	1,281	1,284	1,253
Brazil	5,625	6,137	6,971	7,714	7,934
Chile	146	209	237	241	152
Colombia	324	369	378	433	491
Ecuador	33	25	21	21	29
Mexico	3,322	2,353	3,181	3,413	3,253
Peru	120	186	343	r257	292
Uruguay	34	56	52	51	41
Venezuela	1,027	457	1,292	1,195	996
Central America, not further detailed	82	74	126	192	456
Europe:					
European Economic Community:[8]					
Belgium[3]	4,566	3,563	3,880	3,430	r2,900
Denmark[3 9]	690	644	718	856	776
France[3 5 6]	7,076	7,197	7,135	7,109	7,128
Germany, Federal Republic of[3]	19,339	19,692	20,510	20,517	18,795
Greece[3]	300	275	300	300	400
Ireland[3 10]	76	174	208	254	256
Italy	16,944	15,981	17,280	17,133	16,144
Luxembourg	1,450	1,508	1,857	1,761	1,844
Netherlands	1,594	1,607	1,797	1,858	r1,436
Portugal	522	617	r600	r600	r600
Spain	10,042	10,795	10,911	11,152	r10,541
United Kingdom	11,585	10,569	10,578	7,712	r7,300
European Free Trade Association:					
Austria	1,807	r1,797	r1,851	r1,661	r1,615
Finland[3]	758	786	831	838	837

See footnotes at end of table.

Table 14.—Iron and steel scrap consumption in selected countries[1] —Continued

(Thousand short tons)

Continent, country group, and country	1962	1963	1964	1965	1966
Europe —Continued					
European Free Trade Association —Continued					
Norway[2 4]	587	577	628	597	[r]569
Sweden[2 5 6]	3,145	[r]3,295	[e]3,500	[e]3,600	[e]3,600
Switzerland	[10]915	[e]915	[e]915	[e]918	[e]1,100
Council for Mutual Economic Assistance:					
Bulgaria[2]	320	320	320	320	320
Czechoslovakia[2 4 6]	3,136	3,035	3,334	3,471	3,402
German Democratic Republic[2 4 6 8]	5,643	5,662	5,772	5,800	5,515
Hungary	2,446	2,445	2,705	2,724	2,911
Poland[2]	9,963	9,790	9,620	9,460	10,070
Romania[2]	4,260	4,270	4,300	4,300	4,300
U.S.S.R.[2]	60,300	62,400	64,500	64,500	65,000
Other:					
Yugoslavia[2 4 6]	2,345	2,434	[e]2,500	[e]2,550	2,720
Africa: South Africa, Republic of[2 5]	3,060	2,800	3,000	3,300	3,300
Asia:					
China[2]	9,400	10,100	10,800	11,700	12,700
India[2]	4,200	4,000	4,000	4,200	4,100
Japan[2]	42,532	44,280	47,504	46,625	44,978
Korea, Republic of[2]	2,500	2,500	2,600	2,700	2,800
Taiwan[2 11]	1,400	1,700	1,700	1,700	1,800
Turkey[12]	[e]1,900	1,738	1,862	2,157	[e]2,300
Oceania:					
Australia[2]	2,070	1,880	2,053	2,100	2,000
New Zealand[2]	180	180	180	180	180
Total	317,456	327,473	344,599	[r]349,192	357,748

[e]Estimated. [r]Revised.

[1]Unless otherwise specified, figures represent actual reported consumption of iron and steel scrap utilized in the production of pig iron, ferroalloys, crude steel, foundry products, and rerolled steel, as well as other unspecified uses in the steel industry and by other unspecified industries as reported by the United Nations Economic Commission for Europe in its Annual Bulletin of Steel Statistics for Europe 1966, v. 14, New York, 1967, 23 pp., which is the source of all reported data unless otherwise specified. All estimates are by the Bureau of Mines.

[2]Excludes scrap consumed by steel rerollers.

[3]Excludes scrap consumed in iron foundries.

[4]Excludes scrap consumed within the steel industry for purposes other than the manufacture of pig iron, ferroalloys, crude steel, foundry products, and rerolled steel (details on use not available).

[5]Excludes scrap consumed outside the steel industry.

[6]Bureau of Mines.

[7]Data are from Instituto Latino Americano del Fierro y el Acero. Statistical Yearbook of Steel Making and Iron Ore Mining in Latin America, 1967. Santiago, 1968, 238 pp. Source does not provide details on what is included; presumably figures include total steel industry ferrous scrap consumption but exclude scrap used outside the steel industry.

[8]Portugal and Spain became members of the European Economic Community on Jan. 1, 1986.

[9]Includes scrap used in production of steel casting in shipyards, but excludes scrap, if any, used in production of pig iron and that used in iron foundries.

[10]Organization for Economic Cooperation and Development. The Iron and Steel Industry in 1965, Paris, 1966, 40 pp.; The Iron and Steel Industry in 1963, Paris, 1965, 32 pp.; The Iron and Steel Industry in 1964, Paris, 1966, 36 pp.; The Iron and Steel Industry in 1965, Paris, 1966, 52 pp.; and The Iron and Steel Industry in 1966, Paris, 1967, 52 pp.

[11]Excludes a substantial tonnage derived from shipbreaking (possibly of the order of several million tons annually) for electric-furnace-equipped steel mills.

Table 15.—Iron and steel scrap exports, by selected countries[1]

(Thousand short tons)

Continent, country group, and country	1983	1986	1984	1985	1986
North America:					
Canada	527	946	976	928	[e]900
United States[2 3]	6,587	7,554	9,586	10,809	11,782
Latin America:					
Chile[4]	[e]45	50	139	129	122
Mexico[3]	22	4	17	19	[e]20
Europe:					
European Economic Community:[5]					
Belgium-Luxembourg	549	722	888	811	725
Denmark	130	139	288	288	283
France	3,297	3,297	4,525	4,525	3,434
Germany, Federal Republic of	2,160	2,552	2,908	2,758	2,758
Greece	1	1	1	1	1
Ireland	65	23	47	66	45
Italy	19	20	21	11	9
Netherlands	1,900	1,978	1,951	2,488	2,182
Portugal	10	11	10	11	11
Spain	1	1	4	1	—
United Kingdom	3,997	4,182	4,788	4,988	4,550
European Free Trade Association:					
Austria	19	14	23	26	24
Finland	(6)	(6)	11	11	—
Iceland	4	4	12	7	3
Norway	26	40	28	19	9
Sweden	39	28	34	34	32
Switzerland	116	184	118	110	[e]100
Council for Mutual Economic Assistance:					
Bulgaria	63	42	53	42	4
Czechoslovakia[4]	107	137	205	155	112
German Democratic Republic[4]	22	23	40	39	6
Hungary	58	55	97	[e]44	18
Poland[4]	284	161	134	88	31
U.S.S.R.[4]	2,569	3,715	3,758	3,653	4,200
Other: Yugoslavia	70	78	137	191	174
Africa:					
Algeria[3]	62	61	91	98	[e]100
Morocco[3]	57	75	101	89	97
South Africa, Republic of[4]	4	81	81	97	112
Asia:					
Bahrain[3]	8	7	[e]10	[e]10	[e]10
Brunei	5	10	12	9	[e]10
China[4]	108	49	15	[e]25	[e]30
Cyprus	8	9	15	16	15
Hong Kong[3]	227	262	221	222	278
India[3]	20	20	20	20	20
Indonesia[4]	(6)	1	1	1	1
Japan	193	182	161	189	202
Korea, North[4]	15	7	[e]10	[e]10	20
Korea, Republic of[3]	155	214	149	88	70
Kuwait	30	77	136	[e]100	[e]100
Malaysia[3]	7	14	22	24	[e]25
Mongolia[4]	26	24	[e]25	[e]25	[e]25
Philippines[3]	2	1	2	1	1
Saudi Arabia	23	[e]25	[e]25	[e]25	[e]25
Singapore[3]	9	122	139	134	100
Taiwan[3]	443	308	223	428	310
Thailand[3]	3	2	4	4	6
Turkey	(6)	(6)	2	[e]4	[e]5
United Arab Emirates	7	[e]10	[e]10	[e]10	[e]10
Vietnam[4]	[e]10	13	2	61	101
Oceania:					
Australia[3]	1,249	574	469	585	623
New Zealand[3]	3	3	4	[r]2	3
Total	[r]25,906	[r]27,011	[r]28,208	[r]34,256	37,283

[e]Estimated. [r]Revised.

[1]Unless otherwise specified, source is United Nations Economic Commission for Europe, Annual Bulletin of Steel Statistics for Europe 1988, v. 14, New York, 1987, 36 pp.

[2]Official trade returns of subject country.

[3]Includes rerolling material.

[4]Partial figure; compiled from import statistics of trading partner countries.

[5]Portugal and Spain became members of the European Economic Community on Jan. 1, 1986.

[6]Less than 1/2 unit.

Table 16.—Iron and steel scrap imports, by selected countries[1]

(Thousand short tons)

Continent, country group, and country	1982	1983	1984	1985	1986
North America:					
Canada	505	737	1,283	974	e827
United States[2]	468	641	577	611	724
Latin America:					
Argentina[3]	2	8	2	1	1
Brazil[3]	8	(4)	34	35	41
Chile	e10	16	e10	e10	19
Colombia[3]	30	51	48	e50	e50
Cuba[4]	e100	107	106	109	98
Mexico[3]	464	390	696	r1,016	e1,000
Peru[3]	e18	20	20	20	20
Venezuela[3]	23	20	400	547	e550
Europe:					
European Economic Community:[5]					
Belgium-Luxembourg	978	1,152	1,843	1,642	1,347
Denmark	97	74	146	53	123
France	304	338	449	508	389
Germany, Federal Republic of	1,421	1,424	1,985	1,776	1,517
Greece	478	573	362	345	302
Ireland	3	77	97	150	134
Italy	6,141	4,901	6,047	6,388	5,232
Netherlands	244	461	527	646	936
Portugal	138	119	132	116	114
Spain	5,249	5,227	5,531	6,776	e7,292
United Kingdom	41	12	37	55	52
European Free Trade Association:					
Austria	420	241	490	263	127
Finland	56	41	36	125	71
Norway	4	17	14	12	7
Sweden	583	496	925	976	769
Switzerland	118	162	301	265	e356
Council for Mutual Economic Assistance:					
Czechoslovakia[6]	81	173	172	48	48
German Democratic Republic	502	741	1,141	977	1,087
Hungary	15	31	22	15	9
Poland	6	6	8	6	6
U.S.S.R.[6]	27	24	49	28	49
Other: Yugoslavia	560	812	861	804	718
Africa:					
Egypt[3]	14	2	1	2	2
Morocco[3]	3	3	1	2	e2
South Africa, Republic of[3]	31	8	61	8	e50
Asia:					
Bahrain[3]	5	3	e3	e3	e3
China[4]	3	2	74	547	376
Hong Kong[3]	71	30	31	22	37
India[3]	500	500	500	800	800
Indonesia[3]	250	284	268	210	e200
Japan	2,232	4,306	4,429	3,587	3,554
Korea, Republic of[6]	1,994	2,090	2,284	2,640	3,434
Malaysia[3]	28	55	53	e55	e50
Pakistan[3]	173	132	134	169	162
Philippines[3]	28	(4)	1	1	94
Singapore[3]	103	104	87	72	230
Syria[3]	27	7	2	e15	e15
Taiwan[3]	718	811	637	766	1,351
Thailand[3]	450	707	545	725	612
Turkey	825	1,184	1,144	r1,323	r1,988
Oceania:					
Australia	e1	--	13	1	1
New Zealand[3]	6	3	3	3	6
Total	26,536	r29,253	r34,462	r36,278	37,692

eEstimated. rRevised.

[1]Unless otherwise specified, source is United Nations Economic Commission for Europe. Annual Bulletin of Steel Statistics for Europe 1986, v. 14, New York, 1987, 88 pp.

[2]Official trade returns of subject country.

[3]Less than 1/2 unit.

[4]Partial figures; compiled from export statistics of trading partner countries.

[5]Portugal and Spain became members of the European Economic Community on Jan. 1, 1986.

[6]Partial figure; compiled from incomplete returns of subject country and export statistics of trading partner countries.

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